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AIRCRAFT CIRCULARS

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

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No. 32

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MACCHI M.39 SEAPLANE

Single-Seat Racer with an 800 HP. Fiat "A-S2" Engine

From "L'Ala d'Italia," November, 1926

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Washington  
March, 1927

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NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS.

AIRCRAFT CIRCULAR NO. 32.

MACCHI M.39 SEAPLANE

Single-Seat Racer with an 800 HP. Fiat "A-S3" Engine.

This seaplane was designed by the engineer Castoldi, to participate in the Schneider Cup Race of 1926 at Norfolk, Va., and was built at the Varese factory of the Macchi Company. It inherited nothing from the M.33, which competed in the race of 1925 at Bay Shore Park, Baltimore, Md. A central hull, although affording greater stability in water, was always a great obstacle to penetration and was therefore replaced by two floats, so braced as to form a rigid support. The engine was installed in the fuselage, which is harmoniously streamlined, with the elimination of all angularity. The monoplane wing is situated under the fuselage and is rigidly braced by steel cables. The horizontal empennage consists of a large stabilizer and an elevator in two unbalanced parts. The vertical empennage consists of two fins, one above and one below the fuselage, and an unbalanced rudder. These parts have no external bracing. Another substantial innovation consists in the adoption of two-wing radiators with the elimination of the resistance offered by honeycomb radiators or Lamblin radiators of the fin type. The oil radiator is incorporated in the bottom

\* From "L'Ala d'Italia," November, 1926, p. 475.

of the fuselage, in a well-exposed position for cooling.

The characteristics of this seaplane, the winner of the Schneider Cup Race, are as follows:

Span	9.26	m	(30.38 ft.)
Length	6.743	"	(22.12 "
Height	3.06	"	(10.04 "
Wing area	14.5	$m^2$	( 156.08 sq.ft.)
Weight without power plant	883	kg	(1958 lb.)
Weight of power plant	412	"	( 908 "
Weight empty	1300	"	(2866 "
Useful load	315	"	( 694 "
Full load	1615	"	(3560 "
Wing loading	112	$kg/m^2$	( 22.94 lb./sq.ft.)
Power loading	1.8	$kg/HP.$	( 3.91 lb./HP.)

This seaplane realized a mean speed of 396.112 km/hr (246.13 mi./hr.) over the whole race course. It can attain, in rectilinear flight, a maximum speed of about 420 km/hr (260.98 mi./hr.)

The victorious seaplane (Figs. 1, 2, and 3) was equipped with a Fiat "A-S.2" water-cooled, V-type ( $60^\circ$ ), 12-cylinder engine with direct propeller drive, having the following char-

acteristics:

Power at 2500 R.P.M., 882 HP.

Length of engine 1.584 m (5.20 ft.)

Width " " 0.720 " (2.36 " )

Height " " 0.948 " (3.11 " )

Diameter of cylinder 140 mm (5.51 in.)

Stroke 170 " (6.69 " )

Compression ratio 6

Stroke volume 2.617 liters (159.698 cu.in.)

Total for 12 cylinders 31.4 " (1916.38 " )

Two high-tension Marelli magnetos

Reed metal propeller.

The weight of the engine, including the water in the cylinder jackets and tubing, the residual oil, the starting device and the fuel pump, is only 467 grams (1.03 lb.) per horsepower, which is smaller than the minimum yet attained by any other constructor.

The three double carburetors, one for every four cylinders, are specially designed, so as to enable them to function regularly in any position of the seaplane.

Translation by Dwight M. Miner,  
National Advisory Committee  
for Aeronautics.

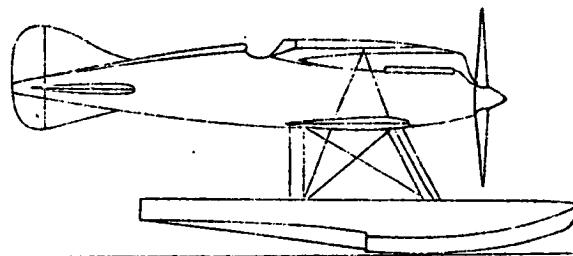
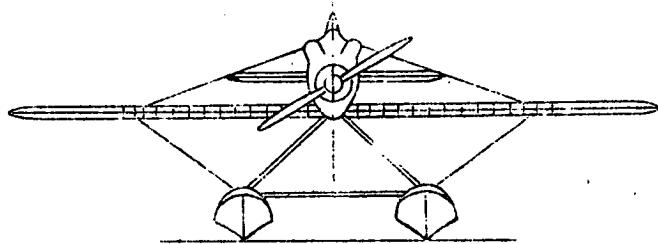
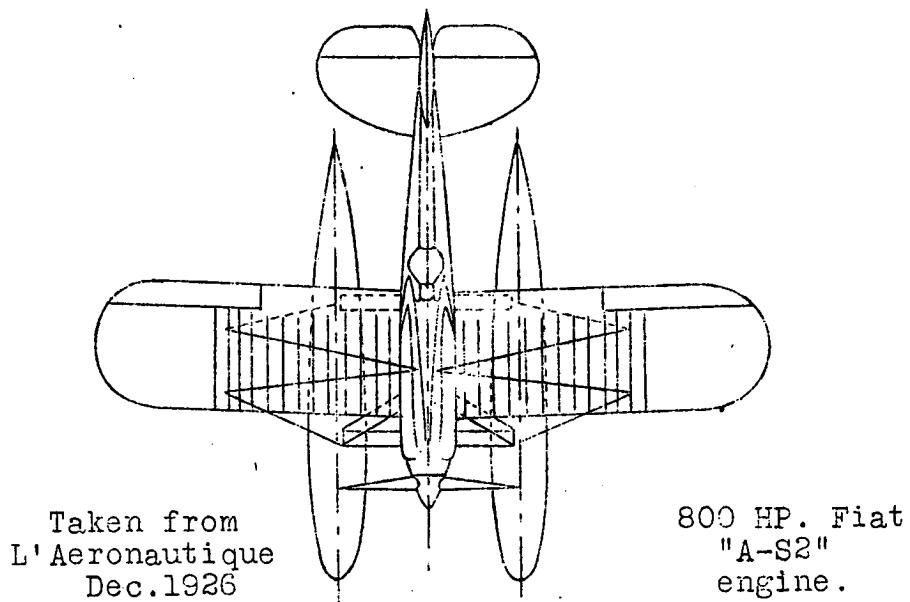


Fig.1 The Macchi seaplane M39



Figs.2 & 3 The Macchi M39 seaplane winner of the 1926 International Schneider Cup Race held at Norfolk Va.